

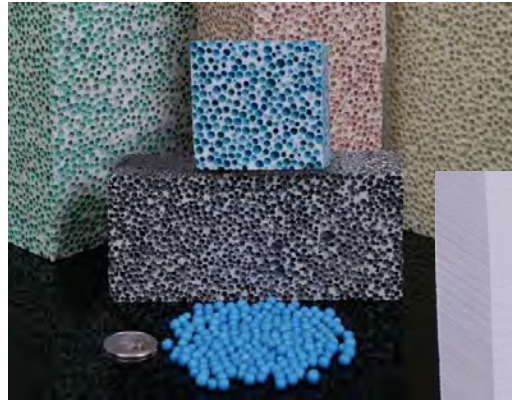


Microsphere & Macrosphere Engineered Syntactic Foam

Product Overview

Highlights

- **Operational Depth Range:**
(Surface - Deepest Ocean Depth)
- **Lowest Density Available**
in the Entire Industry
- **High Compressive and**
Hydrostatic Strength
- **Wide Range of Densities**
and Grades
- **Low Water Absorption at**
Depth



Engineered to Perform

ESS syntactic foams are engineered to provide the lowest possible density for any given depth. Designed to withstand high hydrostatic pressure with extremely low water absorption, these lightweight foams meet the depth and buoyancy requirements of a wide range of floatation applications, with extensive use in AUVs, ROVs and HOVs.

ESS offers two distinct types of buoyancy materials: microsphere and macrosphere syntactic foams. They range in construction and density from 18 lbs/ft³ to 45 lbs/ft³ and are operational from the surface down to the ocean floor.

Microsphere Syntactic Foam

Typically provided in block form, this isotropic material is offered in a range of densities and is formulated to meet depth and buoyancy requirements below 10 000 meters. It is available in four grades which are based on service depth and correspond with the oceanic zones. Densities may vary within layers or overlap zones.

MZ Grade	BZ Grade	AZ Grade	HZ Grade
Mesopelagic Zone	Bathypelagic Zone	Abyssopelagic Zone	Hadal Zone
200 - 1 000 m	1 000 - 4 000 m	4 000 - 10 000 m	> 10 000 m

Macrosphere Syntactic Foam

These specially engineered MacroFoam products integrate fiber reinforced spheres into the standard syntactic matrix, allowing for lower densities, lower cost buoyancy and the fabrication of larger structures. MacroFoam is available in standard, off-the-shelf sheets and near-net shape or finished geometries. Macrosphere foams are offered in a range of densities and specialty grades. MacroFoam safely operates from the surface down to depths of 1600 meters.



Microsphere & Macrosphere

Engineered Syntactic Foam

Density Selection Chart

Product	Depth Rating (meters)	Depth Rating (feet)	Density (kg/m ³)	Density (lb/ft ³)
Microsphere Foams				
MZ - 24	1 000	3 280	385	24
MZ - 38	1 000	3 280	610	38
BZ - 24	2 000	6 560	385	24
BZ - 26	3 000	9 840	416	26
BZ - 28	3 800	12 464	450	28
AZ - 29	4 000	13 120	465	29
AZ - 31	5 000	16 400	495	31
AZ - 34	6 000	19 680	545	34
HZ - 34	7 000	22 960	545	34
HZ - 38	10 000	32 800	610	38
HZ - 42	12 450	40 836	670	42
HZ - 45	12 450	40 836	720	45
Macrosphere Foams				
MacroFoam - 18	300	1 000	290	18
MacroFoam - 20	500	1 650	320	20
MacroFoam - 22	750	2 500	350	22
MacroFoam - 24	1000	3 280	390	24
MacroFoam - 26	1 250	4 100	420	26
MacroFoam - 28	1 500	4 920	450	28
MacroFoam - 30	2 000	6 560	480	30